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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,660	08/11/2003	Shinichi Takahashi	50195-519	4069
20277 7590 11/07/2007 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			EXAMINER CHU, HELEN OK	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 11/07/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/637,660

Applicant(s)

TAKAHASHI, SHINICHI

Examiner

Helen O. Chu

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-31 is/are pending in the application.
- 4a) Of the above claim(s) 7-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1, 3-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's Amendments have been received on July 23, 2007. Claims 1 and 3 have been amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 23, 2007 has been entered.

Claim Objections

4. Claims 5 and 6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, claims 5 and 6 are drawn to a motor vehicle and not to the fuel cell system, therefore, these claims do not further limit the recitation of the claimed invention.

Claim Rejections - 35 USC § 112

5. The rejections under 35 U.S.C. 112, second paragraph, on claims 1, 3-6 withdrawn because the Applicants amended the claims.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 5 and 6 do not further limit the fuel cell system as recited in claims 1, 3 and 4. Appropriate corrections are required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1,3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levy et al. (US Patent 4,839,247) as evidence by Ito et al. (US Patent 6,926,982).

In regard to claims 1 and 4, the Levy reference discloses a fuel cell system with a fuel cell that generates current and an electrolysis cell that can regenerate current that

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has two modes of operation, an electrolysis mode and fuel cell mode (Column 1, Lines 30-45) which inherently has a controller. During fuel cell mode, water is produced by the chemical reaction and the electrons leave the fuel cell from the anode from conduction elements (Figure 4, components 58 and 80) into a load in this case is the electrolysis cell. During the electrolysis mode, electrons are supplied to break up the water molecule into separate hydrogen and oxygen molecules. The cathode of the fuel cell is connected to the cathode of the electrolysis cell through an oxygen manifold and the anode of the fuel cell is connected to the anode of the electrolysis cell through the H₂ passage.

The electrolysis cells act as a battery by supplying current into the fuel cell which is shown to be art-recognized equivalents at the time the invention was made. Evidence is provided by Ito et al. in Column 4-5, Lines 66-3; the system can collect a regenerative current by water electrolysis so that a battery, which was essential to the conventional system is not necessary. Though it is not as clear in the Levy et al. reference on the parallel connection between the electrodes, the Ito et al. reference clearly discloses the chemical reaction between the oxidant and fuel during generation relative to water during regeneration which is the same chemistry in Levy et al.

In regards to claim 3, Levy et al. reference discloses a fuel cell having a pair of end plates (Figure 4, Component 55 and 73), a membrane electrode assembly which would have polymer electrolyte membrane and a diffusion layer (Figure 4, Component 18).

It is noted that claims 1, 5 and 6 have "intended use" language and it has been held that a recitation with respect to the manner in which a claimed apparatus is

It is noted that claims 1, 5 and 6 have "intended use" language and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Response to Arguments

Applicant's arguments filed July 23, 2007 have been fully considered but they are not persuasive.

Applicants' principal arguments are:

A) Levy, at column 1, lines 12-18, merely states, "[t]his invention relates to a regenerative electrochemical cell stack which can operate as an electrolysis cell stack or as a fuel cell stack. More particularly, this invention relates to a stack of the character described which is static or passive in operation and does not require any pumps of the like to move gases, coolant, or product water."

B) In contrast to Levy, claim 1 requires, "a controller programmed to: determine whether or not the fuel cell stack is generating electricity, and supply current to the unit cell of the fuel cell stack from the battery through the parallel connection to allow the unit cell to electrolyze water therein, when generation of electricity by the fuel cell stack is terminated."

C) The fuel cell (18) is not a unit cell that generates electricity and also electrolyzes water therein, as required by claim 1.

D) The secondary art (Official Notice of automobiles) does not remedy the deficiencies of Levy.

E) In contrast to Ito, claim 1 requires, "a controller programmed to: determine whether or not the fuel cell stack is generating electricity, and supply current to the unit cell of the fuel cell stack from the battery through the parallel connection to allow the unit cell to electrolyze water therein, when generation of electricity by the fuel cell stack is terminated."

F) However, in Ito, power generation and electrolysis do not occur simultaneously, see column 8, lines 12-15. Therefore, the fuel cell cannot act as a battery for supplying electricity when water electrolysis is. Thus, Ito does not disclose "a battery connected to the fuel cell stack in a parallel connection" as required by claim 1.

G) Applicant submits that claim 1 is patentable over Ito and Official Notice of automobiles.

In response to the Applicant's arguments, please consider the following:

A) These arguments are not commensurate with the scope of the claims, the claimed invention does not require any pumps to move gases, coolants and products.

B), D), E), G) The claimed invention has "intended use" language and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

C) the claimed recitation states "Supply current to the unit cell of the fuel cell stack from the battery through the parallel connection to allow the unit cell to electrolyze water therein." In the Levy reference the unit cell is the combination of the electrolysis cell and the fuel cell in a fuel cell stack and therefore, the Applicant's invention holds no novelty of the prior art.

F) These arguments are mere assertions of which the Applicants did not provide any evidence to support the arguments. The Applicants asserts that because fuel cell cannot act as a battery for supplying electricity when water electrolysis is, hence, Ito does not disclose a battery connected to the fuel cell stack in a parallel connection. The Ito et al. discloses that electrolysis cells can be used in place of battery cells in Column 4-5, Lines 66-3 and Figure 1 where the anode of the fuel cell is connected to the anode of the electrolysis cell and the cathode of the fuel cell is connected to the cathode of the electrolysis cell.

Conclusion

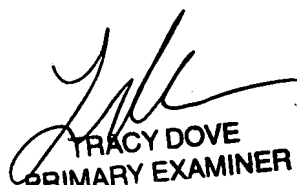
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC


TRACY DOVE
PRIMARY EXAMINER
10/07